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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,154	02/13/2002	Miguel Peeters	1875.2040001	4699

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EXAMINER	
KIM, KEVIN	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/073,154	PEETERS, MIGUEL	
	Examiner	Art Unit	
	Kevin Y. Kim	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 15, 2006 have been fully considered but they are not persuasive.

Applicant traverses the rejection of claim 1 by asserting that a filter's length and that filter's taps are not identical characteristics. However, applicant has fails to substantiate this assertion. Applicant has provided not evidence or technical explanation that the length and the number of taps of a filter are independent.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1,3-7,17 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Strait et al (US 6,834,079 previously cited).

Claims 1,3,17.

Strait et al discloses (see Fig.1 and 2) a modem receiving a multitone signal having a plurality of symbols with a cyclic extension of length M samples transmitted through a channel (120), comprising:

a signal input for receiving the multitone signal (140) and

a transversal equalizer (144) connected to the signal input and including a finite impulse response filter (154) such that the combined impulse response of the channel (H(z)) and the transversal equalizer (1-A(z)) targets a target impulse response (B(z)) having N taps, where N and M are integers and N<(M+1). See col. 4, line 67 – col.5, line 3 describing that "the length of the filter B(z) is selected to match the length of the cyclic prefix." In other words, M=N, thus meeting the condition N<(M+1) required in the claim.

Further with respect to claim 17, Fig. 1 shows a first modem (102) having a cyclic extension addition module (see col.4, lines 19-27) and a D/A converter (136) for transmitting the DMT symbols and extension. With respect to claim 19, the second modem (112) has a same transmission structure corresponding to that of the first modem. Note that although a modem has both transmission and reception for two-way communication, Fig.1 shows one transmitter and one receiver for the sake of simplicity.

Claim 4.

As admitted by applicant, the target impulse response having N samples is internally represented by a data set having M+1 data elements, at least the first or last of the M+1 data elements being set to zero. See Specification at page 2, lines 5-24.

Claims 5 and 6.

See col. 5, lines 2-7 for calculating the coefficients of the equalizer to minimize the error between the combined impulse response and the target impulse response.

Claim Rejections - 35 USC § 103

4. Claims 7,9-13,15,16, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strait et al (US 6,834,079 previously cited) in view of Pessoa (US 6,535,552 previously cited but not used).

Claim 7,9,13,15.

Strait et al discloses (see Fig.1 and 2) discloses a method of equalizing a multitone signal formed of a stream of multitone symbols having an extension of length M samples passing through a channel with a finite impulse response filter (CHANNEL RESPONSE H(Z)) having filter coefficients, comprising;

receiving the multitone signal (at the input of the finite impulse response filter (CHANNEL RESPONSE H(Z)),

passing the multitone signal through the finite impulse response filter and

adjusting the filter coefficients of the equalizer so that a combined effect of the channel and the finite impulse response filter on the multitone signal targets a target impulse response (B(z)) having N samples of the multitone signal, where N and M are intergers and $N<(M+1)$.

Strait et al fails to teach delaying the multitone signal and subsequently adjusting the filter coefficients based on the delayed multitone signal. Pessoa teach delaying the multitone signal (see Fig. 3) for the purpose of compensating the propagation delay. Thus, it would have been obvious to delay the multitone signal and subsequently adjust the filter coefficients based on the delayed multitone signal in the Strait et al's method for the purpose of compensating the propagation delay that would result more accurate coefficient determination particularly when the channel is long and the propagation delay is not negligible.

Claims 10 and 16.

As admitted by applicant, the target impulse response having N samples is internally represented by a data set having M+1 data elements, at least the first or last of the M+1 data elements being set to zero. See Specification at page 2, lines 5-24.

Claims 11 and 12.

See col. 5, lines 2-7 for calculating the coefficients of the equalizer to minimize the error between the combined impulse response and the target impulse response.

5. Claims 2,8,14,18,21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strait et al as applied to claim 1 and over Strait et al in view of Pessoa as applied to claims 7 and 13 above respectively, and further in view of Spruyt et al (US 6,088,386, previously cited).

Strait et al discloses all the subject matter claimed but for "a bit adjustment means for lengthening or shortening one or more symbols for use in frequency domain interpolation." Spruyt et al teaches a DSL modem including a phase rotator (TROT) and a skip/stuff means (TSS) for aligning transmitted and received symbols. See col.3, lines 39-45. The skip/stuff means (RSS) for aligning transmitted and received symbols functions to frequency modulating the multitone signal Thus, it would have been obvious to one skilled in the art at the time the invention was made to add a phase rotator and a skip/stuff means in the DSL modem of Strait et al for aligning transmitted and received symbols, as taught by Spruyt et al.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KEVIN KIM
PATENT EXAMINER